

CLAIMS

Please amend the claims as follows:

Claims 1-3 (Canceled).

Claim 4 (Withdrawn): A plasma processing apparatus as claimed in claim 1, wherein said material constituting said conductive material portion is silicon.

Claim 5 (Withdrawn): A plasma processing apparatus as claimed in claim 1, wherein said material constituting said dielectric material portion is silicon dioxide.

Claim 6 (Withdrawn): A focus ring having a contact portion to be disposed in contact with an electrostatic chuck on which is mounted an object to be processed that is to be subjected to plasma processing, the focus ring comprising:

a dielectric material portion that forms said contact portion; and
a conductive material portion that faces said electrostatic chuck with said dielectric material portion therebetween.

Claim 7 (Withdrawn): A susceptor comprising:
an electrostatic chuck on which is mounted an object to be processed that is to be subjected to plasma processing; and
a focus ring having a contact portion disposed in contact with said electrostatic chuck;
wherein said focus ring has a dielectric material portion that forms said contact portion, and a conductive material portion that faces said electrostatic chuck with said dielectric material portion therebetween.

Claim 8 (Currently Amended): A plasma processing apparatus comprising:

a susceptor having an electrostatic chuck on which is mounted an object to be processed that is to be subjected to plasma processing, and a focus ring having a contact surface disposed in contact with said electrostatic chuck around a periphery of the object to be processed, said focus ring being mounted on said electrostatic chuck, said electrostatic chuck having a chuck device to which a chuck voltage is applied, and said electrostatic chuck attracting said focus ring by electrostatic attraction generated by the chuck voltage applied to said chuck device;

heat exchange means provided at said contact surface, for carrying out heat exchange with said focus ring, said heat exchange means comprising a groove ~~provided in~~ exposed to said contact surface and filled with a heat transfer medium;

a controller that controls the chuck voltage applied to said chuck device, said controller changing the chuck voltage in accordance with each of multiple sequences of a plasma process; and

a chamber having said susceptor therein, wherein:

said controller sets the chuck voltage applied to the chuck device high during at least one processing sequence;

said groove is formed in said electrostatic chuck;

said heat exchange means further comprises a supply path that supplies ~~[[a]]~~ the heat transfer ~~gas~~ medium to said contact surface;

said controller is configured to control ~~controls~~ a pressure of the heat transfer ~~gas~~ medium supplied from said heat exchange means and configured to change ~~changes~~ the pressure of the heat transfer ~~gas~~ medium supplied in accordance with each of multiple steps of the plasma process; and

the controller is configured to set the chuck voltage and the pressure of the heat transfer gas medium are not set to zero to a non-zero level during conveying of the object into and out of said chamber so as to carry out cooling of said focus ring during conveying the object to be processed into and out ~~from~~ of said chamber.

Claims 9-10 (Canceled).

Claim 11 (Withdrawn): A plasma processing apparatus as claimed in claim 8, wherein said groove is formed in said focus ring.

Claim 12 (Canceled).

Claim 13 (Previously Presented): A plasma processing apparatus as claimed in claim 8, wherein said groove has a depth of not less than 0.1 mm.

Claim 14 (Previously Presented): A plasma processing apparatus as claimed in claim 8, wherein said groove has corners thereof rounded off.

Claim 15 (Previously Presented): A plasma processing apparatus as claimed in claim 8, wherein said groove comprises at least one groove having an annular shape concentric with said focus ring.

Claims 16-17 (Canceled).

Claim 18 (Previously Presented): A plasma processing apparatus as claimed in claim 8, wherein said chuck device comprises an electrode built into said electrostatic chuck in a manner facing said focus ring.

Claim 19 (Previously Presented): A plasma processing apparatus as claimed in claim 8, wherein said heat exchange means reduces a temperature of said focus ring to at least 20°C below a temperature of said electrostatic chuck.

Claim 20 (Original): A plasma processing apparatus as claimed in claim 19, wherein said heat exchange means reduces the temperature of said focus ring to not more than 0°C.

Claim 21 (Previously Presented): A plasma processing apparatus as claimed in claim 8, wherein said heat exchange means comprises heating means for heating said focus ring.

Claim 22 (Withdrawn): A plasma processing apparatus as claimed in claim 16, wherein said focus ring further comprises second heating means for heating said focus ring.

Claim 23 (Withdrawn): A plasma processing apparatus as claimed in claim 16, wherein said focus ring is exposed to a cleaning gas.

Claim 24 (Withdrawn): A plasma processing apparatus as claimed in claim 16, wherein said focus ring is exposed to a plasma.

Claim 25 (Withdrawn): A plasma processing apparatus as claimed in claim 8, wherein said heat exchange means comprises a Peltier device.

Claim 26 (Withdrawn): A focus ring having a contact surface to be disposed in contact with an electrostatic chuck on which is mounted an object to be processed that is to be subjected to plasma processing, around a periphery of the object to be processed, the focus ring comprising:

heat exchange means provided at said contact surface, for carrying out heat exchange with said focus ring.

Claim 27 (Withdrawn): A susceptor comprising:

an electrostatic chuck on which is mounted an object to be processed that is to be subjected to plasma processing;

a focus ring having a contact surface disposed in contact with said electrostatic chuck around a periphery of the object to be processed; and

heat exchange means provided at said contact surface, for carrying out heat exchange with said focus ring.

Claim 28 (Previously Presented): A plasma processing apparatus as claimed in claim 8, wherein the supply path is evacuated when reducing a pressure inside said chamber.

Claim 29 (Previously Presented): A plasma processing apparatus as claimed in claim 8, wherein the pressure of the heat transfer gas is increased in accordance with incrementing of the chuck voltage during the process sequence.

Claim 30 (Previously Presented): A plasma processing apparatus as claimed in claim 8, further comprising a heating member in contact with said focus ring and covering at least an outer peripheral surface of said focus ring.

Claim 31 (Previously Presented): A plasma processing apparatus as claimed in claim 8, wherein the controller is configured to control the chuck voltage to maintain a same polarity during the at least one processing sequence as during conveying the object from the chamber.

Claim 32 (New): A plasma processing apparatus as claimed in claim 8, wherein the controller is configured to control the chuck voltage to a first non-zero level during processing and configured to control the chuck voltage to a second non-zero level during conveying of the object into and out of said chamber.